

Abstract Submitted
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Levenberg-Marquardt Algorithm Applied to Cassini-CAPS Corotational Data ROBERTO LIVI, University of Texas, San Antonio, JERRY GOLDSTEIN, JIM BURCH, ANNA DEJONG, FRANK CRARY, DAVE YOUNG, Southwest Research Institute, San Antonio, FRAN BAGENAL, University of Colorado, Boulder — Plasma corotation flow around Saturn is analyzed using a non-linear, least squares fitting routine based on the Levenberg-Marquardt algorithm, tailored specifically for data from the Cassini Plasma Spectrometer (CAPS). The program assumes the plasma to consist of two species, a light group (H^+) and a water group (W^+) corotating at the same velocity. It is therefore designed to automatically model a one-dimensional Maxwell-Boltzmann distribution (one for each species) to a large data set and derive the corresponding densities, velocities, and temperatures using minimal computer resources for faster computation. Preliminary results derived by the algorithm are presented for six years of CAPS data, from all longitudes, between 3-10 Saturn radii (R_S) and $\pm 10^\circ$ latitude.

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